

Division of Wildlife Management N.C. Wildlife Resources Commission 1722 Mail Service Center Raleigh, NC 27699-1722

ADDRESS CORRECTION REQUESTED

Small Game Awards

THE N.C. WILDLIFE RESOURCES COMMISSION PRESENTED ITS ANNUAL SMALL GAME AWARDS TO

an individual award recipient and an organization award recipient during the August Wildlife Commission meeting. These Small Game Awards recognize the outstanding efforts by the public to enhance small game species and habitats. This year's individual award actually went to two people, William G. Clark III and William G. Clark IV of Edgecombe County. The organization award winner this year was the Hunting Creek Chapter of Quail Unlimited in Iredell County.

THE CLARKS MANAGE 4,000 ACRES IN EDGECOMBE COUNTY. ON THEIR CROPLAND, THE CLARKS

have created small game habitat by establishing hedgerows; removing trees from the hedgerows; converting odd areas to brushy, early successional habitat; and using the notill planting method. The Clarks manage their timberland for small game, too, by thinning, burning and creating a transition zone between forest and cropland. According to William G. Clark IV, both father and son are avid quail hunters and have enjoyed working with Wildlife Commission biologists to create habitat on their land.

THE HUNTING CREEK CHAPTER OF OUAIL UNLIMITED WAS INSTRUMENTAL IN ESTABLISHING THE

Turnersburg Cooperative in Iredell County, the first cooperative of the Commission's new CURE (Cooperative Upland-habitat Restoration and Enhancement) Program. The Hunting Creek chapter worked with local landowners to maximize small game habitat opportunities on private property. The chapter also raised funds for habitat creation through U.S. Department of Agriculture programs and other grant opportunities.

3rd Eastern Native Grass Symposium

October 1-3, 2002, at the North Carolina Botanical Garden and Friday Center, Chapel Hill, N.C. For more information, phone (919) 962-0522.

\$75,000 Grant for the C. Program

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The N.C. Wildlife Resources Commission received a boost to its CURE (Cooperative Upland-habitat Restoration and Enhancement) Program recently through the efforts of the N.C. Chapter of Quail Unlimited. The chapter applied for and received a \$75,000 National Fish and Wildlife Foundation grant. The grant requires matching funds, which the Wildlife Commission was able to provide. Quail Unlimited then donated the \$75,000 in grant money to the Wildlife Commission for work on private land to benefit bobwhite quail and nongame early successional birds through the CURE program. The money will be used in 2001 and 2002 for management activities such as burning and thinning timber land, removing undesirable vegetation, promoting volunteer native warm-season grasses and creating early successional habitat areas.

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Managing Openings for Ruffed Grouse

REATING AND MANAGING OPENINGS IS a popular practice among land managers and landowners interested in wildlife. Openings can provide both food and cover for many wildlife species. Use of openings varies among species, time of year and type of opening. For example, deer, turkeys, groundhogs and rabbits relish clovers in a food plot during spring. Male woodcocks perform their sky dance in old fields in winter. Quail nest in native warmseason grasses during summer. Turkey and quail broods search for insects and other invertebrates in ragweed and brambles during late spring and summer and consume soft mast in summer and fall. And deer and rabbits browse the woody stems and twigs available in old fields through fall and winter.

But what about grouse?

The ruffed grouse is primarily a bird of the disturbed forest, and little is known about its specific use of and requirements for openings. Over the past three years, researchers at the



University of Tennessee have been working with the N.C. Wildlife Resources Commission on a study to answer questions about the ecology and management of ruffed grouse. Besides learning about nesting ecology, survival, and use of different forest types and age classes, we also have learned quite a bit about how and why grouse use openings.

Grouse poults, like young turkeys and quail, feed upon insects and other invertebrates (such as spiders and snails) during the first few weeks of life to fill their protein and calcium requirements for bone and tissue growth. Thus, habitats that provide plenty of "bugs," along with suitable cover, are very important. Generally, forest types with an herbaceous understory are used for brooding. In the southern Appalachians, these stands are usually limited to northand east-facing slopes where it is relatively cool and moist. The herbaceous layer is important because it allows poults to feed upon bugs within their reach and provides cover from predators. In many areas, the overstory in these stands blocks out sunlight, which reduces available light in the herbaceous layer. Therefore, in these undisturbed areas, a lack of brooding habitat may be a limiting factor for grouse. In such situations, managing openings for additional brood range could reduce daily movements and exposure to predators, and in turn increase brood survival

Use of openings in fall and winter

All openings are not created equal. Some are overgrown thickets; some are nothing more than hayfields. Grouse use these openings in different ways, depending on the season, much like wild turkeys. In winter, grouse in the southern Appalachians feed on what little is available. A diet analysis from 110 birds collected along logging roads in North Carolina and Virginia during March of 1999 and 2000 showed grouse were feeding on buds, catkins and twigs from birch, azalea and serviceberry; leaves of Galax, Christmas fern and mountain laurel; seed from soft mast (such as greenbriar, grape and Viburnum); a few invertebrates; and acorns and beechnuts. Herbaceous material included several forbs (broad-leaved herbaceous plants), such as clover, cinquefoil, wild strawberry, ragwort and avens.

It is important to note that these birds were collected along seeded logging roads, many of which were dominated by orchardgrass. Perennial cool-season grasses (most notably orchardgrass and fescue) present problems when planted in openings created for grouse and allowed to dominate. One or both of these grasses are commonly sown with clover. Unless mowed or grazed regularly, the grass overtakes the clover. By the second growing season, one is left with an opening of cool-season grass—good for cows or horses, but not grouse. Only regular

Continued on page 2

mowing and maintenance will keep coolseason grasses in check.

Use of openings in spring and summer

Grouse use openings for brood range, primarily because of invertebrate availability. Invertebrate sampling within openings, however, has shown that more invertebrates are found within openings dominated by forbs, not grasses. Openings dominated by orchardgrass or fescue, or both, harbored far fewer invertebrates than those openings dominated by forbs. Further, orchardgrass and fescue form a dense sod at ground level. This, coupled with thatch build-up, considerably limits movement by 2- to 5-inch tall grouse poults. As a result, we have found that grouse broods use the perimeter of openings dominated by orchardgrass—that is, along the edge of the opening underneath the bramble growth where movement is not impeded and invertebrates are available.

Grouse broods also have been observed within the openings dominated by forbs. In these openings, forbs form a "canopy," allowing movement underneath while concealing the broods overhead. Some of the best openings for grouse are planted logging roads with brambles and slash along the sides, which provide escape cover nearby. As with fields, mobility along roads is limited when planted to perennial cool-season grasses.

What do you plant, and how do you manage?

Given the detrimental effects of perennial cool-season grasses, it is best to leave them out of the mix when planting openings. In fact, on many sites, it may not be necessary to plant anything at all—just allow the seed bank in the top few inches of soil to germinate. If your opening presently consists of



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perennial cool-season grasses, then your first step should be spraying with a multi-purpose herbicide such as Roundup®. Burn the dead material off the field in late winter, just before spring green-up. That alone will stimulate an opening full of naturally occurring forbs that will provide excellent brood habitat. Disking is another way to stimulate the seed bank—just as it is done to improve quail habitat. One way to take advantage of this is by disking firebreaks around your openings. Some sections of the firebreak may be planted, and some can be left alone to revegetate naturally.

Often openings have to be planted to avoid erosion and runoff. An excellent mix to use in these situations is ladino clover and annual ryegrass or winter wheat (there are several other possibilities, including annual clovers, oats and birdsfoot trefoil). Because the ryegrass and wheat are annuals, they die and leave a stand of clover after the first growing season. Although some of the annual ryegrass may reseed naturally the following year, it's not a problem. Ryegrass does not form a dense sod, especially at the following rate: 8 lbs. ladino clover, 5 lbs. annual ryegrass. Most of the soils in the mountains of North Carolina are low in pH, so liming (usually two to three tons per acre) is necessary to grow a nice stand of clover. After a few years, the pH is going to go back down and the clover is going to thin out. For grouse, this is not a problem because naturally occurring forbs will pioneer into the opening and offer good brood habitat. Clovers can be maintained for a longer period by topdressing with lime

Because grouse eat clover in fall and winter and naturally occurring forbs provide excellent brood habitat during spring and summer, the best-case scenario is to manage for both. You can do this by planting half of the opening in clover and managing the other half for "naturals." Another way is to plant your firebreak in clovers and leave the interior of the field to natural growth. The openings left in natural growth should be bush-hogged or burned every two or three

and fertilizer in the fall and mowing after

flowering in late summer or fall.

years. If woody growth begins to be a problem, burn two or three years in a row. Burning is highly recommended. It consumes litter buildup and clears the ground, which makes invertebrates and seeds more available and stimulates herbaceous growth.

Patchiness and irregular edge are good!

Grouse are edge creatures. They tend to like it where two or more habitats come together-much like quail. Thus, openings shouldn't be too large (less than two acres), and it's best if the edge is irregular in shape. If your opening is more than two acres, consider breaking up the opening using hedgerows of soft-mast-bearing species (such as apple, crabapple, wild plum, hawthorn, serviceberry, elderberry and dogwood) and pines (for additional cover along the hedgerow). This will create additional cover and edge across the opening and also allow you to manage the two or more sections differently (such as burning on a different rotation or planting some sections and leaving others). Another way to reduce field size and enhance adjacent cover for grouse is to allow succession to advance two to three tractor widths around the field. Over time, woody sprouts and saplings will create

round the field. Over time, woody
sprouts and saplings will create
a soft edge around the opening
with a dense stem density, which
is preferred

by grouse. Smaller openings can be enhanced by thinning undesirable stems 15 to 20 feet into the woods

surrounding the opening. Either way, continued thinning over time around your opening is recommended to keep the soft edge effect.

Creating and managing openings for grouse can be very rewarding. Just remember —keep the perennial cool-season grasses out, promote forb growth, burn if possible, and increase edge and cover by using hedgerows and thinning around your opening. This will help you see more broods in the summer and flushes in the fall!

—Dr. Craig Harper, University of Tennessee

The Forgotten Ones Continued.

Virginia Wild Rye *Elymus virginicus*. This cool-season grass occurs throughout the state in low woods, ditches and waste places with moist soils. Although it is considered a bunch grass, it tends to grow with the leaves spaced along the stem rather than from the base of the plant. It makes most of its growth in the spring and is dormant during the hot summer. The seedhead resembles cereal rye, and at maturity may be stiff and upright or slightly recurved. Virginia wild rye provides both forage for deer and livestock and seed for upland game birds. It also serves as a quick cover for erosion control. Seed can be purchased through mail-order nurseries that specialize in native plants and wildlife seed mixes.

Silver Plumegrass *Saccharum alopecuroidum* (syn. *Erianthus alopecuroides*). This warm-season grass grows in scattered locations across the state. It occurs in the mountains at low elevations on roadsides or in open pine forests. It is much more abundant in the Piedmont, where it often occurs with the related sugarcane plumegrass, *S. giganteum*. Silver plumegrass is a tall, slender bunchgrass that could be mistaken for indiangrass at first glance. But unlike the golden-colored indiangrass, the plumegrass has silky-looking flower heads that arise from stout stems and have a silvery cast when they catch the light. The seeds may be eaten by some songbirds, but overall wildlife value is said to be low. Both plumegrasses are attractive grasses that could be featured in native wildflower plantings and landscaping situations as an alternative to the invasive exotic *Miscanthus sinensis* or maiden grass, which has taken over the roadsides and right-of-ways of our mountain counties.

Deertongue Dichanthelium clandestinum (syn. Panicum clandestinum). This warm-season grass occurs primarily in the mountains and Piedmont, but also in scattered coastal counties. It grows in low woods and ditches and on streambanks, but it can adapt to dry, infertile sites as well. It is a panic grass, in the same family as switchgrass, Panicum virgatum, but shorter, with wide leaves that stick out at right angles to the hairy stems. Game birds and many songbirds use the seed. Deer may graze on new leafy growth. 'Tioga' deertongue was developed by the NRCS Plant Materials Center for erosion control on poor sites such as highway slopes, gravel pits, and strip-mine waste areas. Several seed companies offer the seed. Adaptable and wildlife-friendly, deertongue may be a good native substitute on critical area sites where tall fescue is traditionally used.

Nodding Indian Grass *Sorghastrum elliottii*. A relative of the more common indiangrass, *Sorghastrum nutans*, this grass also occurs across the state, but it is much less abundant. It occurs primarily in the Piedmont and Coastal Plain in open oak-hickory and pine-oak forests, in river scour areas, and on roadsides and right-of-ways that mimic the open to partially open habitats it prefers. A tall-growing, warm-season bunchgrass with rough, ribbon-like leaves, it is erect but relaxed in form and somewhat smaller than indiangrass. The flowers of both species exhibit a beautiful golden sheen at peak bloom. Songbirds consume the seeds. Indiangrass has a high forage value for livestock, so perhaps this species does too.

Purpletop *Tridens flavus*. This warm-season bunchgrass can be found throughout the state along roadsides, in old fields and in open woods. Somewhat coarse in appearance, it can spread through short rhizomes to form dense stands. Seedheads of loose panicles turn a maroon color in late summer. This grass is grazed by all livestock, but is said to become unpalatable after frost. The seeds may be used by songbirds and upland game birds. This quite common species shows promise for use in roadside meadow mixes. It is being promoted by the NRCS Plant Materials Program. Tests are being done from Maryland to Florida for this broad-ranging species.

Although seldom noticed, these and other native grasses occur in a variety of open habitats across our state. They can be difficult to recognize until they begin to flower. Once I learned how to identify them by their seedheads, I was surprised at their abundance—on our highways and byways, along power lines and wooded edges, in old fields and odd areas. Remnant populations of "prairie" grasses remind us of our state's ecological history, when there were more open grasslands with fewer trees and an abundance of early successional native vegetation. Faced with today's ongoing loss of small game habitat, it seems to me that we should encourage these taller bunchgrasses on both public and private lands throughout our state. Unfortunately, current public perception seems to select against these beneficial grasses and select more for close-clipped lawns. Last fall, after having "discovered" all these different grasses along the roadways and in fields, I was dismayed to find that many of them were mowed off when they began to send up their seedheads. If these native grasses were allowed to develop throughout the summer and remain in place through fall and winter, they would provide vital spring nesting and brood rearing habitat for grassland birds. So spread the word: "Don't mow—Let 'em grow!"

—Kelly Hughes, Forest Stewardship Biologist

References: • www.plant-materials.nrcs.usda.gov

• Forest Plants of the Southeast and Their Wildlife Uses by James and Karl Miller, Southern Weed Society, Champaign, Ill.

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Piedmont Prairies

popular legend says a squirrel could travel from Murphy to Manteo on the treetops when the first explorers reached North Carolina's shores. But the Piedmont of the southeastern states was much more open than is popularly thought. Dr. Larry Barden, professor of biology at the University of North Carolina – Charlotte, has compiled historical references and descriptions of grassland prairies in central North and South Carolina.¹ The journals of such early adventurers as Hernando de Soto (1540), Juan Pardo (1567), John Lederer (1670), John Lawson (1701), Mark Catesby (1720s) and William Bartram (1770s) are fascinating reading for anyone interested in the history and natural history of the Tarheel state.

Historical Occurrence

Unlike the vast prairies of the Midwest, Piedmont prairies were smaller in size and fragmented, and their existence depended upon the frequent fires set by Native Americans. But by the late 1700s, diseases such as smallpox and syphilis brought in by European settlers had decimated populations of Native Americans to the extent that fire was not being applied on the land as it had been for hundreds or thousands of years. The prairies began to give way to pines, and then hardwood trees. Now our collective memory for the past 200 years or so tells us that the Piedmont was always timberland.

The existence of these Piedmont prairies or "savannahs" has been known to ecologists for years, yet little is known about them. What we do know is based on the remaining fragments that have been discovered in recent years—generally areas that have never been plowed—in powerline right-of-ways, roadsides and old pastures.

Historically, these open grasslands were very productive wildlife habitat; early accounts tell of elk, bison and deer. Natural resource managers, as well as hunters who have had the opportunity to experience grasslands like these, know that these high quality habitats attract small game species like quail, wild turkeys and rabbits. Analyses of various grass species show that a field planted in native grasses has a greater nutritional content than a similar field planted in fescue. Studies have also shown increased nesting success of game birds and songbirds in warm-season native grasses.

Re-creating the Piedmont Prairie

Various county, state and federal agencies are interested in both managing the few remaining prairie fragments left in North Carolina and re-creating prairies. Motivations are as varied as the diversity of Piedmont prairies: scientific research, endangered species restoration, aesthetics, cattle grazing and wildlife habitat.

Dr. Tom McCoy has a small cattle farm in Mecklenburg County. Until 1998, his pastures, like most pastures in the Piedmont, were primarily fescue. As part of an overall farm plan to improve wildlife habitat, water quality and aesthetics, Dr. McCoy planted five acres of his pasture to switchgrass, a native, warm-season grass. Switchgrass produces better quality forage in the summertime than fescue, so his cattle gain more weight during this time of the year. Switchgrass also provides much better habitat for quail, rabbits and songbirds than fescue.

Although planting a field of switchgrass is not the same as re-creating a prairie, it does provide some of the same benefits to wildlife. And as in a native prairie, prescribed burning is the best way to manage the grass stand.

On the Suther farm in Cabarrus County, a small, somewhat wet field was always used for hay production. The native grasses and forbs produced a good quality hay for the family's cattle. Botanists with the Cabarrus County Natural Heritage Survey were elated in 1997 when they discovered a rare and unusual assemblage of plants in this field, including big bluestem, little bluestem, gammagrass, plumegrass, indiangrass, wild rye, turtlehead, ladies' tresses, Indian paintbrush and Canada lily. In fact, over 125 species of plants have been identified within the five-acre field thus far. Although not in pristine condition, this precious prairie remnant provides researchers with a glimpse of the beauty and diversity of historic conditions in the Piedmont.

On Public Lands

Piedmont prairie habitat also occurs on public property in Mecklenburg County's Nature Preserves managed by the Park and Recreation Department's Natural Resources Division. At the Cowan's Ford Wildlife Refuge in north Mecklenburg, over 65 acres of crop and hayfields have been converted to mixtures of warm-season native grasses. Big bluestem, little bluestem, Indiangrass, switchgrass and eastern gammagrass have been planted over the last four years using no-till drills. The planting and burning schedule has been staggered to provide continuous habitat and ground cover. Each field is burned about every three years.

Latta Plantation Nature Preserve is the home of a 40-acre Piedmont prairie restoration project. The county purchased the parcel in 1992, six years after it had been clear-cut by the former owner. The remaining trees were cut and drum-chopped by the N.C. Forest Service in 1995, and prescribed burning has occurred annually since.

The Forgotten Ones

Two species of rare plants have been transplanted into the site: Georgia aster and Schweinitz's sunflower. The plants were rescued from areas slated for development. The Latta Plantation prairie also contains several planting plots and transects where various species of seeds have been sown. All the planting has been done with native plants and seed collected within a 30-mile radius. Many additional native prairie species have emerged. One native that responded to the initial conversion is sumac Sumac is thought to be part of the Piedmont prairie, but fire and the sudden abundance of light caused a population explosion of the fast-growing woody plant. Although the sumac appeared to dominate the first year, repeated fire appears to be controlling it. Grasses and forbs are much more visible, and the restoration process appears to be well underway.

Another Mecklenburg County restoration site is the 30-acre McDowell Prairie, where restoration started in 1995. The site contained three small agricultural fields separated by hardwoods. Approximately five acres were planted with a no-till drill, one acre was broadcast and one acre was hydro-seeded. Over 1,200 Schweinitz's sunflower roots rescued from road construction areas have been planted throughout the site. Undesirable woody growth is being eliminated, increasing the acreage of continuous grassland.

Other grassland habitats are being maintained under power-line right-of-ways using fire, herbicides and mechanical means. These undisturbed areas are often a great source for native seed collection as well as places to study grassland communities.

As grassland restoration efforts expand to new areas, techniques are being adapted to local conditions. Landowners and conservationists are cooperating to learn about Piedmont Prairies and the best management methods to use when re-creating or restoring them.

—Ken Knight, Technical Guidance Biologist, and Gary Marshall, Mecklenburg County Parks and Recreation

¹ Barden, L.S. 1997. Historic Prairies in the Piedmont of North and South Carolina, USA. *Natural Areas Journal 17*: 149-152. (Also at http://www.bioweb.uncc.edu/faculty/barden/zlmages/prairiePaper. htm).

hen you think about grasses, you might have the impression that they are all pretty much alike. A grass is a grass is a grass. They grow in your lawn or on the roadside. They don't really do anything much; they're just there, right? Up until a few years ago, that's just what I'd have said. Recently though, I've gained an appreciation of how many different grasses grow in our fields and forests, and how these "wild" grasses vary significantly from the grass we tend around our homes. Four or five native warm-season grasses have gotten mention lately; their benefits to wildlife, and small game in particular, are now being recognized by wildlife managers, sportsmen and native plant enthusiasts. But most of the native grass clan still remains shrouded in obscurity. The following is just a small sample of "the forgotten ones." (Many thanks to Nora Murdock, National Park Service, and Gary Kauffman, U.S. Forest Service, for their valuable comments and insights, and Chris Ulrey, National Park Service, for his help with identification.)

Splitbeard Bluestem *Andropogon ternarius*. A relative of broomsedge (*Andropogon virginicus*), this native, "warm-season" grass (it grows best during the summer months) occurs in dry fields, roadsides and open woods throughout most of the state. It is often found in mixed stands with broomsedge and little bluestem (*Schizachyrium scoparium*). An erect bunchgrass, several feet in height, with flowering stems (culms) arising from basal clumps of both flattened and curly leaf blades, it is indistinguishable from broomsedge until it blooms. The flowering stems are lined with pairs of white tufts that look like rabbit ears. The seeds may be consumed sparingly by bobwhite quail and songbirds such as the field sparrow. It probably does not provide forage for deer, although it is said to be readily grazed by cattle in the spring. Its main benefit to wildlife is the nesting cover it provides.

River Oats Chasmanthium latifolium (syn. Uniola latifolia). This cool-season grass can be found in low woods, roadsides and ditches, and along streams and bluffs, in scattered localities throughout the state. In the mountains, it is found more extensively in moist forest sites along large river systems such as the French Broad, Little Tennessee and Tuckasegee. It grows in loose clumps, spreads by rhizomes (pointed underground shoots) and has a somewhat broad leaf blade. In late summer, river oats can be recognized by the clusters of flattened seedheads that dangle from arching stems. It looks very much like the protected sea oats (Uniola paniculata) on the coast, with which it previously shared the same genus name. The seeds provide food for quail and many songbirds, and the plants are grazed by deer and cattle. It is often used in naturalistic plantings.

Poverty Grass *Danthonia spicata***.** This grass inhabits roadsides and open woods across the state, with the exception of the lower Coastal Plain. Usually found in dry soil, it may move into sites that have been overgrazed or eroded. It is a low-growing grass with blue-green foliage and curly leaves at the base of the clump. The flower stem is thin, and the seedheads somewhat delicate. As the name implies, poverty grass makes poor forage. In the high mountains, a close relative, D. compressa or bald grass, provides seed for songbirds such as the vesper sparrow and wintering snow bunting. These two Danthonias are the most common grass species on the Blue Ridge Parkway: D. spicata at low elevations and D. compressa at mid to high elevations. They respond positively to fire, which may occur from lightning during the summer. A third species, D. sericea or silky oatgrass, is quite striking with its leaf blades covered in a bristly, white down. It has a much longer flowering head and is proba-bly more drought tolerant than either D. spicata or D. compressa. It occurs infrequently at lower elevations in the Mountains, is scattered across the Piedmont and is most abundant in the sandy soils of the Coastal Plain. Although not readily available, poverty grass might be a low-maintenance native alternative to tall fescue for road shoulders and medians.

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